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## How can a social network be used to increase dissemination of research?

### Student Dissertation

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## THU: How can a social network be used to increase dissemination of research (Andy Brooks)

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Andy Brooks

6 January 2017

To begin to understand how we may be able to increase dissemination of research, first we must look at the possible reasons as to why research is not being shared as far widely and as quickly as it could be, my presentation will be looking at ways in which we could increase the dissemination of research and why this might be an advantage.

Leetaru (2016) asks the question, "Why has academia not embraced the internet revolution." In this article he describes the high cost of journal articles, this can be paid by institutions in the form of subscriptions, and then the journals are made available to its members. This of course means that the readership will be limited to the members of those institutions unless of course motivated individuals pay subscriptions themselves. The other option is the open access model, these articles are free to read but the author will generally pay the fee to an open access publisher like Elsevier, this can range from \$500-\$5000

(<https://www.elsevier.com>) This is a barrier that could be stopping some important work from being read by a large proportion of the population. Weller (2011) describes a conversation between himself and a research student, where the student had asked how much he is likely to be paid for his article, only to be shocked to hear he would most likely be the one paying.

Nielsen (2011) argues that networked science has the ability to not only speed up discovery but amplify our collective intelligence, but to counter this he also points out that there are cultural obstacles that are blocking networked science from achieving its full potential. If we can think for a moment about the exponential function whereby as the numbers increase then the growth will increase at an ever faster rate, by harnessing the intelligence of the many we could see exponential progression in much the same way. In his 2011 talk, Adrian Treuille spoke about his involvement with Foldit, a protein folding game with crowdsourcing science at its core. This application allows gamers to play a game of Foldit and in doing so, solve a complex scientific problem by harnessing the skills of many people rather than a small number of scientists in a laboratory. In order to harness the collective, it is necessary for recognition to take place, Fenner (2011) lays out some principles in his book, "Changing the conduct of Science in the information age" these principles include being able to assign credit and the

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ability to uniquely identify specific research.

The academic paper I am undertaking will be looking at these problems and ways in which they can be addressed. The academic paper will be part of a larger project where the findings are used to create a workable real life solution in which the dissemination of research is increased, allowing for the collective intelligence of the masses to be harnessed so we can start to see some exponential progression.

## Extra content

### Exponential Progression

At the very end of my abstract I mention these two words without discussion or explanation. The reason being was due to constraints. Now it would have been very easy to leave these words out altogether but I felt it was important to leave the thought there as it is a driver for the title question.

This could potentially lead to a very large topic on its own, it is my feeling that this is sufficient given the content which will be in my presentation, some of which is already present in the poster, for example see the video on foldit. My reason for this extra content is to pose the question, "Does this idea of exponential progression need extra discussion or fleshing out?" and, "Do I need to be more explicit around this phrase?"

Feedback in the comments would be most welcome.



[Andy Brooks](#)

13:42 on 15 January 2017

### Extended Abstract

This question was arrived at from an initial thought of an educational social space where people can engage in a number of ways for a number of purposes. This piece of research has attempted to look at one area of the whole picture, given the constraints.

In the process of reducing the overall project into manageable chunks, the areas of focus were narrowed into two areas, these were publication and peer review. Even narrowing the focus to these two areas proved to be too big, so the focus was narrowed further, and hence the question above. There are various areas to consider in order to answer this question, firstly a consideration is why isn't research being disseminated more widely? After all, the technology is in place for this to happen. There are many platforms out there which allow anybody to publish their ideas instantly, allowing those ideas to be shown to millions of people. Nielsen (2011) argues that publically releasing data typically does nothing to enhance your career and could in fact damage it, by helping your scientific competitors, this mind set hinders progress. He goes on to say that when GenBank was launched in 1982, biologists were happy to access

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it, and to use others' data but not so happy to share their own. Scientists are not purposely hindering progress, but it is indicative of the way advancement can be made in the academic and scientific community, with regards to promotion and tenure. Weller (2011) says that promotion and tenure are usually judged on a combination of three factors: research, teaching and service. These factors are supposedly weighted equally, but it is often rumoured that research is regarded as more significant (Weller, 2011), and candidates will be required to demonstrate outstanding achievement in two out of the three. This can have the effect of discouraging people to release their work early. Weller goes on to explain that research is the most difficult to represent, particularly to members of a committee who are unlikely to be experts in the field and will need explanation and clarification on the nature of that individual's contribution to the field.

Southwick (2012) recounts the time as a young faculty member struggling to earn tenure. He made a biological discovery within his institution which led to a burst of new research and major advances. A senior professor and a colleague published a paper in which he received no recognition, so he ended up publishing his work separately. As his work was published after the more senior professor's paper he has been cited far fewer times. He goes on to say, that twenty years on, his takeaway lesson has been, the safest approach is to only divulge his results after they have been accepted for publication. Southwick (2012) goes on to state that history is full of discoveries that lack the correct recognition, he identifies the discovery of the structure of DNA and argues that although it was the work of Rosalind Franklin that allowed this discovery to happen she was not recognised. Some believe that the discord surrounding this recognition held up further developments for a decade (Southwick, 2012). We don't know this to be the case, but we do know that most people are less likely to collaborate if they are not getting the recognition they deserve.

These issues are central to my question and at first may seem contrary to what I am proposing, as my question focuses on research being propagated not only more widely, but also quicker as well, preferably in real time to allow mass collaboration.

On launch of the educational social networking site, Cloudworks, Conole (2013) cites one concern is that there could be problems with copyright and ownership, these types of concerns are a common thread that has come up a lot in the course of my research, and so the question really became not just how research can be propagated more widely, but how can we facilitate and encourage the practice of readily disseminating research. We can see how complex problems can be solved by many contributors being involved, for example, the crowdsourcing computer game Foldit enabled thousands of people to participate in solving complex problems that would not have been possible, in the timescales, using more traditional methods. It stands to reason that the more people that are involved in finding solutions, greater successes are possible. This way, much as exponential growth happens, we could see exponential progression.

There is some interesting research happening at the moment using blockchain technology in a variety of ways. Third et al (2016) wrote a paper called Blockchains and the Web Position Paper, in which they introduce the idea of using blockchain technology to enhance standards around badging, certification and reputation on the web. This paper led to further works by the team and also the website <http://blockchain.open.ac.uk> where the research is displayed. Dialogue has been opened with the team, on Twitter, who have been very forthcoming with

regards to establishing a dialogue which will prove invaluable as the research progresses.

One way to facilitate, encourage and increase the dissemination of research could be to incorporate blockchain technology into either a new social network or else an existing site such as Cloudworks. By incorporating blockchain technology into the site it would allow for contributions however small to be recorded securely, and thus allowing collaboration to take place and greater chances for progression. All the while each person can be secure in the knowledge that there is a permanent record of their part that cannot be altered, this allows for microattribution. Fenner (2011) defines microattribution as follows, "Microattribution ascribes a small scholarly contribution to a particular author." Fenner (2011) also describes a set of principles in his paper "Changing the conduct of science in the information age." The first principle highlights that in order to properly assign credit you need to be able to identify unique scholarly contributors. There have already been tests carried out on <http://blockchain.open.ac.uk/> with regards to reputation, and adding publication functionality could compliment this.

The research for this paper has fallen into two categories, the exploratory work which involved where and why the problems exist and the tools that exist to help in solving the problems. Southwick (2012) fell into the former category. It could be argued that this does not provide evidence of an existing problem and it is really just anecdotal evidence from a sample of one, although this could be true in isolation, there are many such papers that could be drawn upon and so the source should be viewed as legitimate. Papers that could be used in a similar vein are Fry et al (2009) and Terras (2012) among others, the same could be said for Weller (2011) but again these problems come up a lot which gives them some validity. Nothing has appeared in my research to date to suggest that anything has changed since these papers were written, and indeed Leetaru (2016) discusses the same problems as Weller (2011).

When it came to the problem solving category, the papers that were used were Third et al (2016) and Sharples and Domingue (2016). Both papers are very new and relevant and provide very useful insights into how technology can be used to solve the problems that this paper is addressing. A problem with using this type of research is the fact that it is so new it hasn't been fully tested, but when dealing with innovative approaches this is something that will come up, furthermore, as this is the type of sharing of research at its early stages that this paper is addressing it needs to reflect upon work that is ongoing and can only progress by using research that is new and is only now being tested. Even though this work is relatively new examples of the work being actively tested can be seen on the <http://blockchain.open.ac.uk/> website, this has been a useful resource. Having access to this coupled with being able to communicate with the authors of this work via Twitter has been valuable and will continue to be so as this work progresses. This approach will allow me to gain very quick and very up to date insights. Using social media and blogs is a great way to gather up to date information, but it is also worthy of mention that care needs to be taken as sometimes information gleaned will be untried and merely an idea that is yet to be tested.

The chosen format is academic paper, the reason being, there is a lot of preparatory work to undertake before embarking on the main project. There was an initial analysis of what is already out there and also what technologies were available and how they can be utilized.

Social networks are a great place where people can share and nurture ideas, but it needn't be restricted to just conversation. Why not use these spaces to share research as it is happening and why not encourage this to happen more freely? For this to happen the contributor needs to be secure in the knowledge that they will receive recognition for their work and it won't be stolen to further someone else's work or not acknowledged when the work helps to further progress. The technology is available that can allow contributions to be securely acknowledged, and the technology can be integrated into a social networking site. This is not the complete answer but can help to improve the situation.



[Andy Brooks](#)

16:21 on 21 January 2017

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**Andy Brooks**

16:22 on 21 January 2017

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**Slide 1** - Title

**Slide 2**

My project started its journey as an idea for an educational space, where people could hang

out, both educators and students. I wanted the space to facilitate sharing of resources, the sharing of ideas, a place to start a conversation and even a place where people can feel comfortable to share their research, even their most recent up to date research in real time.

### **Slide 3**

I started out by calling this space EDUKAF, the name was not really important to me it was a play on the words education and café, with the added twist of an obscure reference to mean to persist or to become stuck. It's not important but I thought I would share that.

I want this site to cover many aspects as you can see; research, collaboration, groups etc. You can look over this slide afterwards at your leisure.

### **Slide 4**

This project was never going to be something I could complete in the time allocated for H818 and so my journey has taken me to more of an exploratory piece which asked the title question, "How can a social network be used to increase dissemination of research."

### **Slide 5**

A real driver behind wanting to explore this question comes from projects such as Foldit and Galaxy Zoo, these are projects that really harnesses the power of bringing many minds together to solve problems quickly that would take years using more traditional methods.

Galaxy Zoo Video <https://www.youtube.com/watch?v=rW1fWMnHOUG>

### **Slide 6**

By Using crowd sourcing methods, we can get better results and a lot faster



## **Slide 7**

So what's this got to do with disseminating research and social networks? By encouraging people to release their research quickly, even in real time there is the chance for many more people to see and use the research to give it new life, new ideas, new angles. For this to happen researchers have to be secure in the knowledge that their work will not be simply stolen and they will receive the appropriate credit for their work.

## **Slide 8**

So how can we encourage researchers to release their work early so we can harness the power of the internet and allow more people to become involved in solving problems

## **Slide 9**

So we can see straight away that researchers could be reluctant to release work early for fear of not getting the correct recognition later on down the line. Martin Weller talks about this in The Digital Scholar, with reference to furthering your career. People rely on getting the recognition they deserve to gain the positions they want.

## **Slide 10**

So the question really becomes "How can we give people the security they need and assure recognition for their work, so that it is an easy decision to release their work as they are doing it?"

## **Slide 11**

There is some great work happening at the moment using blockchain technology over at [blockchain.open.ac.uk](http://blockchain.open.ac.uk) for all manner of things. For those unfamiliar this is the technology behind the alternative currency bitcoin.

Here's a short video

Blockchain video <https://www.youtube.com/watch?v=6WG7D47tGb0&t=28s>

In the video it talks about trust but of course trust is not necessary when using this technology as the information entered onto the blockchain is unalterable and secure. One of the projects they have been working on over at [blockchain.open](#) involves peer reputation, please do go over to the website and have a look it's fascinating. I'll put the link up later

## Slide 12

So this could be a real possibility, by integrating blockchain technology into either an existing website such as Cloudworks (I haven't spoken to anyone involved in the development of Cloudworks I might add) or else creating a website such as EDUKAF with blockchain technology integrated we could help solve the problems I have spoken about. When work is uploaded onto the site there is a permanent, secure record of that work, the person can be secure in the knowledge that it is unalterable and there will be a clear timestamp when this happened also, as I said earlier trust is not necessary. To complement this feature, we can implement a reputation system like the one the guys made over at [blockchain.open](#). This way when somebody puts some research up the community can give the appropriate credit for the work. Even the smallest contributors, if they add value, can gain credit for their part. For me this could really be an exciting prospect and could allow for greater collaboration which could yield ever greater results.

## Slide 13

This is not a cast iron solution but rather putting tools in place that could encourage collaboration on a greater scale. Thanks for listening.



[Andy Brooks](#)

17:24 on 5 February 2017

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[Andy Brooks](#)

3:15pm 13 January 2017 [Permalink](#)

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[Dr Carol Waites](#)

9:29pm 26 January 2017 [Permalink](#)

Very interesting paper. What do you think about researchgate?



[Dr Carol Waites](#)

9:45pm 26 January 2017 [Permalink](#)

I thought your poster was very engaging with interesting video clips and well laid out. Well done!



[Dr Carol Waites](#)

8:28am 27 January 2017 [Permalink](#)

Your link elsevier.com doesn't work as you have hyperlinked the bracket. :)



[Andy Brooks](#)

9:32am 27 January 2017 [Permalink](#)

I don't have a particular opinion on researchgate specifically Carol, but I would say that I see similar problems with it as with other academic social networks and that is the reluctance of researchers to post their research early. This is the area that informed my paper and therefore we need to look at these other ways to encourage the early release. In my opinion the key areas are security and credit.



[Andy Brooks](#)

9:32am 27 January 2017 [Permalink](#)

Thanks



[Andy Brooks](#)

9:33am 27 January 2017 [Permalink](#)

Thanks for the heads up Carol, I'll fix that



[Heather Bloodworth](#)

6:00pm 27 January 2017 [Permalink](#)

Hi Andy, this is an interesting project. I agree that probably plagiarism and copyright problems could be preventing people from publishing on social networks. Utilising technology such as blockchain seems eminently sensible. Look forward to hearing your presentation.



[Leanne Johnstone](#)

7:48pm 28 January 2017 [Permalink](#)

Hi Simon,

A really interesting topic! Do you think that progression grow exponentially for long, or that capacity would be reached causing it to level off again?

Best wishes,

Leanne



[Jude Toasland](#)

9:30am 29 January 2017 [Permalink](#)

Leanne beat me to it! I was also interested in the concept of exponential progression and how this fits with capacity, technology and the limitations of the human imagination.



[Sarah Adrienne Hughes](#)

11:03am 29 January 2017 [Permalink](#)

Exponential Progression... Something I want to get my head around, so I look forward to your presentation. How does your project sit with your colleagues?

Regards,

Sarah



[Andy Brooks](#)

11:56am 29 January 2017 [Permalink](#)

Leanne, Jude and Sarah, this is indeed an interesting aspect of the area of interest, to be honest there is not really time to do this topic justice, hence the reason why I added the extra material. When I am talking of exponential progression I am thinking on the macro level and so as more inputs are added to the field of research then the greater the progress is made. I don't see that there need be a leveling off at this level as there are so many areas of research that could possibly be affected. At the micro level, yes I agree as a certain capacity is reached or a maximum level is achieved in that specific area then a levelling off or stagnation in many cases would occur. In this way it is different from exponential growth as we are normally looking at physical things, finite resources, maximum capacities etc. This is more of an idea of how changing the way we research can impact our progression as a whole at the macro level. I am happy to be challenged on this. Thanks for your comments.



[Andy Brooks](#)

1:01pm 29 January 2017 [Permalink](#)

@Sarah, I have just changed jobs a few weeks ago, I have had quite a change since starting this course and I expect my role to change further in the next 12 months, I have only just moved into an educational role, this means I have not discussed my project with anyone except you guys.



[Uffe Frandsen](#)

2:26pm 1 February 2017 [Permalink](#)

Hi Andy. Very interesting subject. Great but challenging idea to find ways to collaborate more openly in a scientific community. Looking forward to your presentation on this. Foldit seems like a brilliant idea. Will you also talk about ideas for solutions to the cultural barriers you mention in your abstract?



[Paul Curran](#)

9:13am 3 February 2017 [Permalink](#)

Really interesting and timely topic. I was just thinking about how the internet has transformed the media in positive and negative ways. The easy sharing of information can lead to the spread of misinformation quite easily, as we can see. Finding new ways of verification and proofing is just what is needed. Looking forward to this.



[David Jenkins](#)

10:39am 4 February 2017 [Permalink](#)

Hi Andy, really looking forward to this one. It is particularly relevant to my day job as a research support librarian. The biggest cultural obstacle that leaps to mind is the prestige attached to the big journals run by big publishers - I will be really interested to see if this is covered in your talk and if you have uncovered any ways of addressing the issue.



[Andy Brooks](#)

11:40am 4 February 2017 [Permalink](#)

@Uffe it is not really solutions but more encouragement, this is a huge topic and it is almost impossible not to fall down any number of rabbit holes, but I do touch on the fact that it is just an idea to put tools in place to encourage people to slightly alter their practices. Kind of evolution v revolution. Does that make sense?



[Andy Brooks](#)

11:48am 4 February 2017 [Permalink](#)

@Paul, thanks for your comments, you are quite right and verification is really important, it is vital that this verification can take place quickly and fluidly.



[Andy Brooks](#)

11:59am 4 February 2017 [Permalink](#)

@David, your job sounds really interesting by the way. I would love to say I had this all wrapped up, I do talk about this and I would love my suggestions to be solutions. This is exactly the cultural obstacle I had in mind David and have pondered this issue a lot. To find solutions as I see it is to change behaviour, I hope this doesn't sound evasive.



[Dr Simon Ball](#)

4:21pm 9 February 2017 [Permalink](#)

Hi Andy

Please find below the main questions and comments from your live presentation. It's up to you how to answer them, whether you wish to group them, or whether you wish to point to an answer already given above, for example.

Best wishes

Simon

- ▶ Where do you see your project, this time next year?
- ▶ I was interested to hear the term 'crowd sourced' in connection with ideas and information, as I'd only previously associated it with finance. Thank you
- ▶ Cloudworks team welcome suggestions at <https://cloudworks.uservoice.com/forums/62879-general>



[Andy Brooks](#)

6:23pm 9 February 2017 [Permalink](#)

Ideally I would like to see blockchain technology implemented into an existing site. There are people working with this technology who are placed far better than I, the folks over at <http://blockchain.open.ac.uk/> are doing lots of great work in this area and things are moving very fast at the moment. I would like to see if I get any reaction from the

cloudworks dev team before I decide on how to approach things. I have posted to the link above so I shall wait and see.



[Andy Brooks](#)

7:29pm 9 February 2017 [Permalink](#)

Yes crowd sourcing is a very interesting area and was a real driver for my project, it really is an exciting topic. You are right though the term has been associated with finance in the main, but of course the principle can be applied in other areas also.

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